

THE AMENDMENTS

In The Specification:

Please amend the last paragraph on page 3 as follows:

His₆: six C-terminal histidine residues; L: short peptide linker (the amino acid sequence is shown in bold) connecting the V_H and V_L domains (SEQ ID NOs: 1, 2); leader, bacterial leader sequence (e.g. PelB leader) for secretion of recombinant product into periplasm; rbs, ribosome binding site; Stop: stop codon (TAA); V_H and V_L: variable regions of the heavy and light chains specific to human CD3. Four C-terminal amino acids of V_H domain and four N-terminal amino acids of the V_L domain are underlined.

Please delete the first paragraph on page 8 starting with “Figure 15” and ending with “anti-CD3”.

Please add a first paragraph on page 8 as follows:

Figure 15: (a) DNA sequence of plasmid pSKK3-scFv6 anti-CD3 (SEQ ID NO: 16); (b) amino acid sequence of the V_H and V_L connected by the peptide linker SAKTTP encoded by the DNA sequence contained in pSKK3-scFv6 anti-CD3 (SEQ ID NO: 17)

Please amend the second paragraph on page 10 as follows:

The term “Fv-antibody” as used herein relates to an antibody containing variable domains but not constant domains. The term “peptide linker” as used herein relates to any peptide capable of connecting two variable domains with its length depending on the kinds of variable domains to be connected. The peptide linker might contain any amino acid residue, although the amino acid combinations SAKTTP (SEQ ID NO: 1) or SAKTTPKLGG (SEQ ID NO: 2) are preferred. The peptide linker connecting single scFv of (scFv)₂ and single chain diabodies (scDb) might contain any amino acid residue, although one-to-three repeats of amino acid combination GGGGS (SEQ ID NO: 3) are preferred for (scFv)₂ and three-to-four repeats of GGGGS (SEQ ID NO: 3) are preferred for scDb.

Please amend the third paragraph on page 17 as follows:

For constructing the genes encoding the anti-CD3 scFv₁₀ and scFv₆ (Figure 2), the plasmid

pHOG21-dmOKT3 containing the gene for anti-human CD3 scFv₁₈ (Kipriyanov et al., 1997, Protein Engineering 10, 445-453) was used. To facilitate the cloning procedures, NotI restriction site was introduced into the plasmid pHOG21-dmOKT3 by PCR amplification of scFv₁₈ gene using primers Bi3sk, 5'-CAGCCGGCCATGGCGCAGGTGCAACTGCAGCAG (SEQ ID NO: 4) and Bi9sk, 5'-GAAGATGGATCCAGCGGCCGCAGTATCAGCCCGGTT (SEQ ID NO: 5). The resulting 776 bp PCR fragment was digested with NcoI and NotI and cloned into the NcoI/NotI-linearized vector pHOG21-CD19 (Kipriyanov et al., 1996, J. Immunol. Methods 196, 51-62), thus generating the plasmid pHOG21-dmOKT3+Not. The gene coding for OKT3 V_H domain with a Cys-Ser substitution at position 100A according to Kabat numbering scheme (Kipriyanov et al., 1997, Protein Engineering 10, 445-453) was amplified by PCR with primers DP1, 5'-TCACACAGAATTCTTAGATCTATTAAAGAGGAGAAATTAACC (SEQ ID NO: 6) and either DP2, 5'-AGCACACGATATCACCGCCAAGCTTGGGTGTTGTTTTGGC (SEQ ID NO: 7) or OKT_5, 5'-TATTAAGATATCGGGTGTTGTTTTGGCTGAGGAG (SEQ ID NO: 8), to generate the genes for V_H followed by linkers of 10 and 6 amino acids, respectively (Figure 2). The resulting 507 bp and 494 bp PCR fragments were digested with NcoI and EcoRV and cloned into NcoI/EcoRV-linearized plasmid pHOG21-dmOKT3+Not, thus generating the plasmids pHOG21-scFv10/anti-CD3 and pHOG21-scFv6/anti-CD3, respectively.

Please amend the first paragraph on page 18 as follows:

To increase the yield of functional scFv-antibodies in the bacterial periplasm, an optimized expression vector pSKK3 was generated (Figure 3). This vector was constructed on the basis of plasmid pHKK (Horn et al., 1996, Appl. Microbiol. Biotechnol. 46, 524-532) containing hok/sok plasmid-free cell suicide system (Thisted et al., 1994, EMBO J. 13, 1960-1968). First, the gene coding for hybrid scFv V_H3-V_L19 was amplified by PCR from the plasmid pHOG3-19 (Kipriyanov et al., 1998, Int. J. Cancer 77, 763-772) using the primers 5-NDE, 5'-GATATACATATGAAATACCTATTGCCTACGGC (SEQ ID NO: 9), and 3-AFL, 5'-CGAATTCTTAAGTTAGCACAGGCCTCTAGAGACACACAGATCTTTAG (SEQ ID NO: 10). The resulting 921 bp PCR fragment was digested with NdeI and AflII and cloned into the NdeI/AflII linearized plasmid pHKK generating the vector pHKK3-19. To delete an extra XbaI site, a fragment of pHKK plasmid containing 3'-terminal part of the lacI gene (encoding the lac

repressor), the strong transcriptional terminator tHP and wild-type lac promoter/operator was amplified by PCR using primers 5-NAR, 5'-CACCTGGGCGCCCAATACGCAAACCGCC (SEQ ID NO: 11), and 3-NDE, 5'-

GGTATTTCATATGTATATCTCCTTCTTCAGAAATTCGTAATCATGG (SEQ ID NO: 12).

The resulting 329 bp DNA fragment was digested with NarI and NdeI and cloned into NarI/NdeI-linearized plasmid pHKK3-19 generating the vector pHKK□Xba. To introduce a gene encoding the Skp/OmpH periplasmic factor for higher recombinant antibody production (Bothmann and Plückthun, 1998, Nat. Biotechnol. 16, 376-380), the skp gene was amplified by PCR with primers skp-3, 5'-

CGAATTCTTAAGAAGGAGATATACATATGAAAAAGTGGTTATTAGCTGCAGG (SEQ ID NO: 13) and skp-4, 5'-CGAATTCTCGAGCATTATTAACTGTTTCAGTACGTCGG

(SEQ ID NO: 14) using as a template the plasmid pGAH317 (Holck and Kleppe, 1988, Gene 67, 117-124). The resulting 528 bp PCR fragment was digested with AflII and XhoI and cloned into the AflII/XhoI digested plasmid pHKK□Xba resulting in the expression plasmid pSKK2. For removing the sequence encoding potentially immunogenic c-myc epitope, the NcoI/XbaI-linearized plasmid pSKK2 was used for cloning the NcoI/XbaI-digested 902 bp PCR fragment encoding the scFv phOx31E (Marks et al., 1997, BioTechnology 10, 779-783), which was amplified with primers DP1 and His-Xba, 5'-

CAGGCCTCTAGATTAGTGATGGTGATGGTGATGGG (SEQ ID NO: 15). The resulting plasmid pSKK3 was digested with NcoI and NotI and used as a vector for cloning the genes coding for anti-CD3 scFv₆ and scFv₁₀, that were isolated as 715 bp and 727 bp DNA fragments after digestion of plasmids pHOG21-scFv6/anti-CD3 and pHOG21-scFv10/anti-CD3, respectively, with NcoI and NotI.